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Common Riverbank Weeds

of the Hawkesbury-Nepean River and Tributaries.

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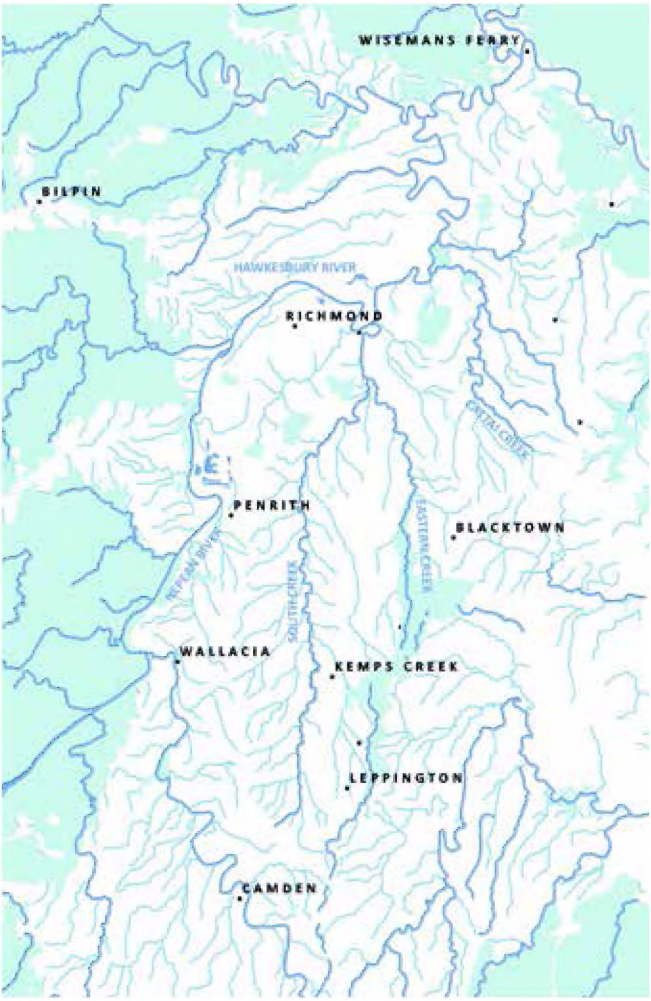
A practical management guide

GREATER SYDNEY LOCAL LAND SERVICES

NSW GOVERNMENT | Local Land Services Greater Sydney

Hawkesbury-Nepean River and its tributaries covered by this guide.



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Illustrations of weed control methods by Virginia Bear, courtesy of the National Trust and the Australian Association of Bush Regenerators.

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Weeds

Weeds are plants that grow out of their place of origin. They can become so dense that they exclude all other species, including those that were there originally. Weeds pose a serious threat to Australia's biodiversity, as well as to primary production. The cost to the environment is very high, with weeds second only to land clearing as a cause of biodiversity loss. The estimated cost to the Australian economy is $4 billion per year.

The weeds included in this booklet are those most commonly found near waterways in the Hawkesbury River, the Lower Nepean River, and their tributaries. The most effective methods of control for each weed are listed and demonstrated.

Photos courtesy of Hilary Cherry (below) and Glen Sanders (right).

Asparagus Fern

General information

Common name:
Asparagus Fern

Scientific name:
Asparagus aethiopicus

Where do I find it?
Occupies a wide range of soils and habitats, including sandstone and alluvial sands. Favours disturbed areas, roadsides, riverbanks and can tolerate light conditions ranging from direct sunlight to deep shade. Also tolerates saline conditions.

Why is it a problem?

It is a persistent plant spread primarily by birds that eat the berries and distribute over a large area. The thick mat of tuberous roots suppresses the natural regeneration of native plants and reduces habitat for native fauna.

Identification and description

Growth Form:
Multi-branched, spiny perennial herb. Forms a thick mat of tuberous roots. Reproduces vegetatively and by seed.

Height:
To 2m high.

Stem:
Green-brown, ridged, often twisted and 30-60cm long with spines 5-10mm long.

Leaf:
Leaves are bright green spiny flattened stems (called cladodes) up to 2.5cm long with a distinct midrib.

Flower:
3-5mm long, white, or pale pink with a bell shape.

Fruit:
Globular berry 5-8mm in diameter, green when immature and red when mature. Berries occur during late winter to early spring.

Note:
Berries are viable in soil for up to five years. Seed is often spread by birds and animals and in garden waste. Seed also germinates after fire.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Hand remove or crown rhizome using "crowning" treatment method. The tuberous roots can be left in the ground.
- Small plants can be treated using a knife blade. Larger plants may be removed using a mattock or peter lever.
- Spot spray (requiring repeated applications) using glyphosate. Use of surfactant is recommended.
- Follow up inspection every three months and treatment of seedlings may be necessary.

Disposal:

- Remove seed from site.
- Leave rhizomes to dry, and regularly inspect for resprouting.

Native species similar in appearance

Scrambling Lily (*Geitonoplesium cymosum*) a hairless branching climber, which can climb to several metres high. Leaves are alternate narrow, 5-8cm long, shiny above, with a distinct mid-vein. Flowers are white and it has black-blue berries. Flowers October to December.

Balloon Vine

General Information

Common name:
Balloon Vine

Scientific name:
Cardiospermum grandiflorum

Where do I find it?
Weed of coastal wastelands and riverbanks, often found growing into tree canopies.

Why is it a problem?

This weed forms a dense layer of leaves, which smothers the host plant and starves it of light. It can form extensive stands, covering all vegetation including canopy trees.

Identification and description

Growth Form:
A climbing vine.

Height:
Up to 8m high.

Stem:
Sturdy brown stem covered with soft golden hairs.

Leaf:
Dark green leaves consisting of nine toothed leaflets.

Flower:
Small and white with tendrils at the base.

Fruit:
An inflated paper-like spherical capsule pointed at one end. The capsule is divided into three partitions, each containing a glossy black seed.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Cut off at shoulder level and leave in tree to die. Pull up or scrape and paint stem with glyphosate. Seeds germinate prolifically and re-shooting of taproot may occur so follow-up is necessary.

Disposal:

- Remove all capsules if possible.

Native species similar in appearance

Slender Grape Vine (*Cayratia clematidea*) has 5 leaflets and no hairs.

Black-eyed Susan

General Information

Common name:
Black-eyed Susan

Scientific Name:
Thunbergia alata

Where do I find it?
A garden escape that will smother native vegetation.

Why is it a problem?

A spreading groundcover which forms extensive mats, this species smothers other ground vegetation and prevents the growth of shrubs and trees.

Information and description

Growth form:
Slender Vine.

Height:
To 4m long.

Stem:
Stems root at node establishing a new plant.

Leaf:
Triangular to heart-shaped, with soft fine hairs and broadly toothed margins.

Flower:
Large five-petal bright yellow-orange flower, with a striking black centre.

Fruit:
The papery sepals remain to cover the beaked capsule containing few seeds.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Hand-pull or dig young plants. Foliar spray larger plants.

Disposal:

Native species similar in appearance

None locally.

Cats Claw Creeper

General Information

Common name:
Cats Claw Creeper

Scientific Name:
Dolichandra unguis-cati

Where do I find it?
Warm moist native forests and riparian zones.

Why is it a problem?

Cats Claw Creeper is a vigorous perennial vine that has the capacity to completely alter native ecosystems. Cats Claw Creeper smothers and kills mature trees, opening up the canopy for light-loving weeds. It produces numerous seed, and has underground tubers making it difficult to control.

Information and description

Growth form:
Perennial woody vine.

Height:
Vine extending to top of trees.

Stem:
Numerous, up to 15cm thick creating a dense mat on the ground or smothering mature trees.

Leaf:
Opposite and compound with three leaflets. Each leaf has a pair of lance shaped leaflets 2-7cm long and 1-3cm wide. The plant's name comes from the modification of the third leaflet which forms a three-pronged tendril with hooked tips.

Flower:
Large yellow trumpet flowers, 4-8cm long, borne in the leaf axil in clusters or as single flowers.

Fruit:
A long narrow "pea-pod" like capsule 30-60cm long and 8-12mm wide. Capsules contain numerous two-winged seeds.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Dense infestations can be very difficult to control. Physical methods require the removal of all tubers. Chemical control includes foliar spraying seedlings and ground runners, or cut and painting the stumps of well-established vines with recommended herbicides. Sites must be followed up to ensure the control of any seedlings or re-growth.

Disposal:

- Tubers must be composted on site or double bagged and disposed of in landfill.

Native species similar in appearance

None locally.

Common Jasmine

General Information

Common name:
Common Jasmine

Scientific Name:
Jasminum polyanthum

Where do I find it?
A serious weed along creeklines. Often dumped.

Why is it a problem?

Climbs rapidly into the tree canopy and covers vegetation at all levels, blocking light and restricting growth. Weight may bring down trees. Often grows with other vines.

Information and description

Growth form:
Vigorous fast-growing evergreen twining climber.

Height:
To 4m long.

Stem:
Stems travel long distances across the ground, frequently rooting down at leaf nodes (layering) to form new plants.

Leaf:
Leaves are compound with 5 to 7 shiny leathery leaflets.

Flower:
Highly scented tubular flowers that are pink in bud and open white and star-like.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Hand-pull or dig young plants. Foliar spray larger plants.

Disposal:

Native species similar in appearance

Morinda (*Morinda jasminoides*) which is a creeper. Has small pits in the leaf which can be found where the veins meet the midvein.

Crofton Weed

General information

Common name:
Crofton Weed

Scientific name:
Ageratina adenophora

Where do I find it?
Usually found on moist disturbed sites in a variety of soil types. Commonly found growing close to watercourses.

Why is it a problem?

Crofton Weed is a medium sized herb capable of forming dense infestations and completely altering vegetation communities. Dense stands of Crofton Weed occuring along watercourses can cause sediment to build up and choke channels, which destroys habitat for many important aquatic organisms.

Identification and description

Growth Form:
Perennial herb to 2m.

Stem:
Multiple stems with distinctive red/ brown colouring.

Leaf:
Triangular leaves with toothed margins.

Flower:
Densely arranged small white flowers.

Seed:
Small seeds dispersed by wind and water.

Note:
Crofton Weed was formerly planted as an ornamental garden plant, before being recognised as a highly invasive species. Crofton Weed is poisonous to horses. If this weed occurs on your property, you are advised to contact your local council to discuss your control obligations.

Crofton weed may also be found with a closely related weed species *Ageratina riparia* (Mist Flower). Mist Flower can be distinguished from Crofton Weed by its more slender leaves.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Remove and bag seed heads to prevent further spread. Plants may be removed manually by hand pulling or using a mattock, although this method is not recommended on unstable soils. Plants may be sprayed using glyphosate herbicide. Follow up spraying is often required after approximately three months.

Disposal:

- After seed head has been removed and disposed of carefully, and the control method applied; the weed may be left on the site.

Native species similar in appearance

None locally.

Japanese Honeysuckle

General information

Common name:
Japanese Honeysuckle

Scientific name:
Lonicera japonica

Where do I find it?
Moist, fertile locations usually on disturbed sites, close to rivers, creeks and drainage lines.

Why is it a problem?

Japanese Honeysuckle is a fast growing woody vine, capable of covering large areas of ground or extending into the tops of trees. The vine smothers and destroys native vegetation and prevents bushland regenerating. The plant is very hardy, tolerating full or part sun, frost, drought and salinity.

Identification and Description

Growth Form:
Climber with multiple stems.

Height:
To 10m.

Stem:
Young stems have a distinctive red colour. Older stems are brown in colour and have a 'woody' form. Stems may root at the nodes when in contact with the soil.

Leaf:
Bright green opposite leaves (up to 8cm long) with hairs along the veins and margins.

Flower:
Flowers 4cm long in pairs, forming near branch tips. White, cream yellow or orange in colour, sweetly scented.

Fruit:
Shiny poisonous black berries to 10mm.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Small plants may be hand removed, taking care to ensure stems do not have contact with the soil. Larger plants can be controlled using the 'scrape and paint method' or the 'cut and paint method' along major stems. When using the cut and paint method, be sure to cut the stem as close to the base as possible. Where significant amounts of stem are buried underground, the scrape and paint method is recommended.
- Honeysuckle may also be sprayed with glyphosate, where there is no risk of overspray affecting nearby waterways and native vegetation.

Disposal:

- After treatment, it is not necessary to remove the whole vine from trees and shrubs. However, it is possible for small pieces of stem to establish as new plants when they are left in contact with the soil. Therefore all cut pieces of the vine should be removed from contact with the soil.

Native species similar in appearance

None locally.

Madeira Vine

General information

Common name:
Madeira Vine, Lambs Tails

Scientific name:
Anredera cordifolia

Where do I find it?
Garden escape now widespread and common in coastal NSW and Qld.

Why is it a problem?

This is a serious weed that will invade forest margins smothering small trees and shrubs. It produces both underground and aerial tubers along the stem, which easily break off when disturbed, making it difficult to control.

Identification and Description

Growth Form:
A hairless perennial climber.

Height:
Stems can extend for 20m or more.

Stem:
Fleshy, sometimes woody, producing aerial tubers.

Leaf:
Thick and fleshy with alternate, bright green, heart shaped leaves 4-13cm long.

Flower:
Small, fragrant, cream flowers are arranged in slender racemes 7-13cm long, which droop from the leaf axils. Flowering mostly summer to autumn.

Fruit:
Produces one seed per fruit.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Scrape and paint stems with glyphosate, leaving aerial part intact. This should kill aerial tubers as well as above ground parts. If removal from mature trees is required, ALL parts of the plant should be bagged and removed off sight, including stems, aerial tubers and below ground tubers.

Disposal:

- Take care to remove all above and below ground tubers as the tiniest piece can re-shoot.

Native species similar in appearance

None locally.

Morning Glory

General information

Common name:
Blue Morning Glory

Scientific name:
Ipomoea indica

Where do I find it?
Found in bushland, in moist regions, such as creeks, rivers or where urban runoff has increased soil moisture levels.

Why is it a problem?

The vigorous twining stems smother trees in bush land, putting pressure on the tree canopy.

Identification and Description

Growth Form:
Vigorous climbing vine.

Height:
Height of the tree canopy.

Stem:
Tough and twining stoloniferous stem which roots at the nodes.

Leaf:
Alternate, light green, hairy, heart-shaped leaves, often having 3-5 lobes.

Flower:
Large funnel-shaped violet-blue flowers in groups of 3-12 opening in the morning for only a few hours.

Fruit:
Blue Morning Glory is not known to set seed in Australia.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Cut at shoulder level and allow stems to die off in tree. Treat onground stems by scrape & paint with glyphosate.

Disposal:

- Prevent stems from contact with ground, as they can re-shoot.

Native species similar in appearance

Ipomoea pes - capra subsp. brasiliensis grows on coastal sand dunes.

Periwinkle

General information

Common name:
Periwinkle, Blue Periwinkle, Vinca

Scientific Name:
Vinca major

Where do I find it?
A garden escape commonly occurring along river banks, on silty alluvial soils, but also widespread adjacent to urban areas.

Why is it a problem?

A spreading groundcover which form extensive mats, this species smothers other ground vegetation and prevents the growth of shrubs and trees.

Information and description

Growth form:
Spreading perennial herb.

Height:
50cm

Leaf:
Leaves round, opposite, 1.5-9cm long, 1.5-4.5cm wide, glossy green above, paler below. The stems can root at the node, establishing a new plant.

Flower:
Large five-petal purple / blue flowers

Fruit:
Not known to fruit in Australia.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Small infestations can be dug out. In sunny situations, covering infestations with plastic sheeting for 4-6 months in the warmer months will weaken the plant. Regrowth can then be dug or sprayed (this method will not work in the shade). Foliar spray with herbicides, repeat treatments of regrowth will be needed. If treating riverbank infestations, it may be necessary to plant native vegetation after treatment, to prevent erosion.

Disposal:

- Every fragment of stem can potentially re-grow and needs to be removed and destroyed off-site.

Native species similar in appearance

Scurvy Weed (*Commelina cyanea*) has narrow leaves and a smaller deep blue flower.

Moth Vine

General information

Common name:
Moth Vine, White Moth Plant

Scientific name:
Araujia sericiflora

Where do I find it?
Weed of coast and tablelands. Found in wasteland, farmland and lightly forested areas.

Why is it a problem?

Smothers existing vegetation and considered poisonous to livestock.

Identification and Description

Growth Form:
A woody climbing plant often attaching to existing trees.

Height:
Vine extending to top of trees.

Stem:
Twining stem with woody base & thickened tap root. Oozes white latex when cut.

Leaf:
Opposite leaves. Upper surface dull green, lower surface white to grey.Also oozes latex when cut.

Flower:
White to pink tubular flowers arranged in loose clusters or singly in summer.

Fruit:
Large green Choko shaped fruit containing many seeds, each having long silky hairs at one end.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Hand pull, removing all of the tap root, leaving vine to die in canopy.
- Scrape and paint base of stem with glyophosate, if not possible to handpull.

Disposal:

- Bag all fruits if possible.

Native species similar in appearance

Silkpod (*Parsonsia straminea*) - no white latex sap if leaf is pulled off.

Running Bamboo

General information

Common name:
Running Bamboo

Scientific Name:
Phyllostachys spp

Where do I find it?
Riparian zones, garden escapes to adjacent bushland.

Why is it a problem?

Running bamboo is an invasive plant that can spread rapidly and vigorously. It will out-compete native plants by creating an impenetrable network of roots, heavy leaf litter and dense shade.

Information and description

Growth form:
Large species of grass with thick woody stems.

Height:
Up to 10m.

Stem:
Round, woody hollow culms (stems). Also has underground stems (rhizomes) which send up multiple shoots.

Leaf:
Bamboos typically have lanceolate leaves between 5-15cm long, and 6-22mm wide. Leaf colour varies between species.

Flower:
Rarely flowers.

Fruit:
Does not produce seed.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Slash stems and spray when regrowth reaches one metre. Repeat as necessary. Cut and paint with neat herbicide for smaller infestations.

Disposal:

- Plant material must be disposed of in landfill.

Native species similar in appearance

Common Reed *Phragmites australis* is sometimes mistaken for bamboo. Common Reed does not have hollow culms and produces feathery white/pink flower heads.

Turkey Rhubarb

General information

Common name:
Turkey Rhubarb; Acetosa

Scientific name:
Acetosa sagittata

Where do I find it?
Weed of mainly disturbed sites in deep moist gullies, forests and sandy riverbanks.

Why is it a problem?

A climbing vine which can smother native plants, blocking out light and competing for nutrients.

Identification and Description

Growth Form:
Perennial, robust scrambling climber. Climbing stems greater than 1m long.

Height:
Vines can cover other vegetation to a considerable height.

Leaf:
Soft, hairless, alternate, and have both stalks and stipules.

Flower:
Cream flowers in Spring.

Fruit:
Papery with three wings, straw colour at maturity.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- This plant has large tubers which need to be removed. This often takes considerable digging. Chemical controls are available. Spraying with glyphosate is the most effective, though stem scraping has been known to work well.

Native species similar in appearance

None locally.

Wandering Jew

General information

Common name:
Wandering Jew; Trad

Scientific name:
Tradescantia fluminensis

Where do I find it?
Weed of gardens and shaded areas. Also naturalised along N.S.W coastline on moist fertile soils along creeks and drainage lines.

Why is it a problem?

Invasive weed, capable of covering entire ground surface preventing any other species from establishing. The stem fragments, if broken, are capable of re-sprouting and forming a new plant. Often spread during floods along drainage lines.

Identification and Description

Growth Form:
A weak trailing perennial succulent herb.

Height:
Low creeping herb, up to 50cm.

Stem:
Hairless, green, crisp and watery, rooting at nodes along stolon.

Leaf:
Shiny, alternate, broadly lanceolate, and hairless except for fine hairs at the base.

Flower:
3 white petals subtended by 2 unequal leaf-like bracts in sessile terminal clusters.

Fruit:
Not produced in Australia.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Remove by hand, with knife or trowel or with rake. Roll into blankets and compost in sunny area under thick black plastic. If no natives present, spray with glyphosate on cloudy days in winter. Follow-up is essential, as stolons will re-shoot.

Disposal:

- Remove from site if possible.

Native species similar in appearance

- Scurvy Weed (*Commelina cyanea*) has longer hairy sheaths, longer & narrower lance-like leaves, fleshy roots & blue flowers.
- *Aneilema biflorumis* is similar to *Commelina* & has a white flowers.

Photo courtesy of Michael Noble (below).

African Boxthorn

General information

Common name:
African Boxthorn

Scientific Name:
Lycium ferocissimum

Where do I find it?
Pastures, roadsides, reserves, remnant bushland and waterways. African boxthorn will grows on all soil types but establishes best on lighter soils, particularly along dry creek beds.

Why is it a problem?

African boxthorn forms an impenetrable, spiny thicket that inhibits the movement of stock and provides a haven for feral animals. It is now a serious weed threat in all States and is one of the major weed threats to the semi-arid rangelands of western NSW.

Information and description

Growth form:
Erect perennial shrub with woody, thorny growth.

Height:
Up to 5m high and 3m across but usually reaches only 2 or 3m in height.

Stem:
Rigid and very branched, and the main stems have spines up to 15 cm long. Each smaller spiny branchlet ends in a stout spine.

Leaf:
Smooth, fleshy and up to 3.5cm long.

Flower:
Flowers are white with pale blue markings and fragrant. They have five petals.

Fruit:
The berries are green when young and succulent, round, 5 to 10mm in diameter, contain 35 to 70 seeds and are orange-red when ripe. Fruit can set and seeds can germinate at any time of the year if there is adequate moisture and warmth.

Best control methods
(see pages 70-75 of this booklet)

Treatment:

- Remove mechanically, by physically removing the top growth and as many of the roots as possible. The removed plant material should then be burnt. After physical removal of the mature plants, suitable sites can be deep ripped, bringing most remaining root fragments to the surface to be raked and burned. Follow-up treatment with herbicide will need to be directed at the regrowth.

Chemical control can include:

- Foliar spray the whole bush thoroughly with herbicide when the plant is actively growing. For large bushes this technique is costly and difficult to obtain good coverage
- Basal bark treatment is most suited for small bushes with stem diameters up to 5cm. Spray a herbicide registered for this activity around the complete base of every stem to a height of 30 to 40cm above the soil surface.
- Cut and paint stump treatment: Use on larger plants with stem diameters greater than 5cm. Cut each stem off 15cm above the soil surface. Paint a herbicide registered for this activity to the cut surface within 30 seconds of the cut being made.

Disposal:
Destroy all plant material either by bruining or disposal at land fill.

Native species similar in appearance:

- Blackthorn (*Bursaria spinosa*) - a spiky native shrub, has smaller leaves and does not produce berries.
- Tree Violet (*Hymenanthera dentata*) – a tall native shrub, often with spines, with a small purple / black berry.

African Olive

General information

Common name:
African Olive

Scientific name:
Olea europaea ssp. cuspidata

Where do I find it?
On a wide range of soils and habitats, including clay soils, sandstone and alluvial sands. African Olive prefers riverbanks and disturbed areas and is also found on road sides. Tolerates high temperatures and dry conditions.

Why is it a problem?

Medium to fast grower, producing fruit readily eaten by birds who are largely responsible for its dispersal. It forms a dense canopy which suppresses the growth and natural regeneration of native vegetation below.

Identification and Description

Growth Form:
A large evergreen shrub or small tree with spreading branches and a dense rounded crown. It is often multi-trunked.

Height:
2-15m.

Stem:
White-grey bark dotted with pores.

Leaf:
Simple, opposite, narrowly elliptic, 6-10cm long and 1-2.5cm wide. Glossy grey-green above and green or yellowish-brown below. A distinctive yellowish mid-vein and a hooked tip are distinguishing features.

Flower:
Small and creamy-white or greenish.

Fruit:
Purplish-black succulent fruit when ripe, seeding from May to October.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Remove small seedlings by hand.
- Larger plants need to have trunks cut and painted with undiluted glyphosate.
- Remove fruit from tree.
- Treated plants may re sprout from the base. Follow up inspection and treatment maybe necessary.

Disposal:

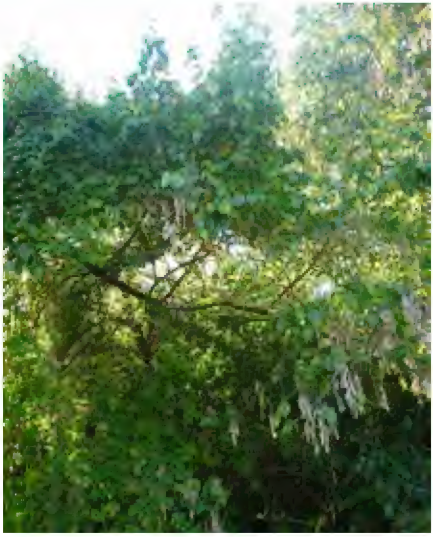
- The stems can be cut up and left as mulch.
- Bag and remove fruit and seeds from site if possible. Either bury or burn seeds or dispose of at landfill.

Native species similar in appearance

- Tree Violet (*Hymenanthera dentata*) is a shrub to 3m tall with glossy, toothed leaves and branches ending in thorns. Flowers September to December.
- Blackthorn (*Bursaria spinosa*) a shrub usually 2-3m tall with light foliage and side branches ending in thorns. Leaves are notched at the tip and has fragrant white flowers (January to April).

The native species Blackthorn can be mistaken for African Olive and African Boxthorn.

Box Elder



General information

Common name:
Box Elder, Ash-leaved Maple

Scientific name:
Acer negundo

Where do I find it?
On the banks of rivers and streams and in wetland areas in sheltered situations. Once a popular garden species before being recognised as an invasive weed.

Why is it a problem?

Box Elder is a fast growing, long lived tree native to North America. It has effective wind and water dispersal with winged seeds. Box Elder displaces native vegetation and degrades habitat for native animals.

Identification and Description

Growth Form:
A deciduous small to medium-sized tree.

Height:
Up to 8m high.

Stem:
Trunk usually divides into several stout and wide-spreading branches forming a rounded, asymmetrical crown.

Leaf:
3-7 leaflets attached to a central stem. Light green and smooth on the upper side, paler and smooth under leaf.

Flower:
Small greenish-yellow insignificant flower.

Fruit:
Yellowish-green fruit with distinctive wings.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Pull out young seedlings. Cut and paint adults with glyphosate when actively growing between September and April.

Disposal:

- Leave cut stems / trunks in situ.

Native species similar in appearance

Shows little resemblance to any local native species.

Castor Oil Plant

General information

Common name:
Castor Oil Plant

Scientific name:
Ricinus communis

Where do I find it?
Widespread weed of wastelands, railway embankments, river banks and roadsides on medium-enriched nutrient soils.

Why is it a problem?

Seeds are poisonous to livestock and humans. Juice, leaves and stem can cause contact dermatitis.

Identification and Description

Growth Form:
Perennial, an erect stem, similar in appearance to bamboo.

Height:
Up to 6m high.

Stem:
Resembles bamboo; about 5-7cm diameter.

Leaf:
Strap like, stem-clasping, evenly spaced in 2 rows along length of the stem. Indented midrib. No constriction at leaf base.

Flower:
A dense, erect silky plume-like inflorescence up to 60 cm long.

Fruit:
A grass-like grain.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Spreads by rhizome so all stems must be treated. Cut & paint with glyphosate. If not near rivers or creeks can brush cut in late winter & spray regrowth in spring. Follow-up required for re-shooting rhizomes.

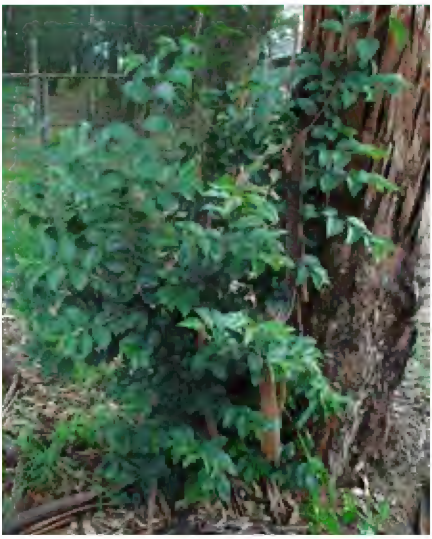
Disposal:

- Bag all seed heads and rhizomes.

Native species similar in appearance

Native Reed is a smaller plant and has upright leaves, and its inflorescence plume will droop.

Chinese Hackberry



General information

Common name:
Chinese Hackberry; Celtis

Scientific Name:
Celtis sinensis

Where do I find it?
Naturalised in damp areas, particularly along the banks of waterways.

Why is it a problem?

Young trees grow in a wide range of soils and can quickly colonise an area. The plants grow in dense groups, dominating native plants and damaging ecosystems.

Information and description

Growth form:
Deciduous tree.

Height:
12-20m tall.

Leaf:
Glossy green leaves, with a paler underside and pronounced veins. The plant has a serrated leaf edge in the upper half of the leaf only.

Flower:
Small cream flowers from late winter to early spring.

Fruit:
Small berries 7-8mm in diameter, which turn reddish brown in Autumn.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Hand pull or dig out small seedlings. Larger seedlings can be cut and painted with appropriate herbicide. Trees may need to be removed by a professional contractor.

Native species similar in appearance

None locally.

Fennel

General information

Common name:
Fennel

Scientific name:
Foeniculum vulgare

Where do I find it?
Weed of wastelands, alluvial flats, riverbanks, roadsides, railway embankments and irrigation channels.

Why is it a problem?

Rapid coloniser, capable of forming dense infestations, which can exclude other vegetation. Frost resistant.

Identification and Description

Growth Form:
Stout, erect, much-branched, hairless perennial herb.

Height:
Up to 2m high.

Stem:
Striated, smooth, green-grey stem filled with a white spongy pith.

Leaf:
Finely divided, lacy, thread-like leaves with a strong characteristic smell of aniseed.

Flower:
Flower heads are compound umbels at the end of the branches with yellow petals rolled inwards, appearing from November - May.

Fruit:
Ovoid-oblong, grey-brown to yellowish-brown aromatic seed with 5 prominent ribs. Seed germinates after disturbance.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Hand pull seedlings, mattock out larger plants or cut and paint with herbicide.

Disposal:

- Dispose of seed heads and crowns.

Native species similar in appearance

None locally.

Green Cestrum

General information

Common name:
Green Cestrum, Green Poison Berry

Scientific name:
Cestrum parqui

Where do I find it?
A garden escape, occurring in NSW on the coast, plains and slopes.

Why is it a problem?

This long-lived shrub is toxic to stock, birds and bees and is a ready coloniser of bushland.

Identification and Description

Growth Form:
Perennial, many-branched shrub, partly deciduous in winter.

Height:
Up to 2m high.

Stem:
Older branches woody & striated at base, newer branches whitish.

Leaf:
Alternate and lanceolate. Unpleasant odour when crushed.

Flower:
Greenish yellow, in terminal clusters. Unpleasant odour by day, fragrant by night.

Fruit:
Purplish-black berry containing 1-2 seeds. Spread by birds.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Inject root ball with neat glyphosate. Hand pull seedlings, mattock out larger plants to remove suckering roots. Cut and paint at swollen base with glyphosate when actively growing in spring. May need follow-up.

Disposal:

- Bag all berries.

Native species similar in appearance

None locally.

Honey Locust

General information

Common name:
Honey Locust

Scientific name:
Gleditsia triacanthos

Where do I find it?
On riverbanks, flood plains and in backswamp areas.

Why is it a problem?

Honey locust is a rapidly growing, aggressive tree that can smother pastures and out compete native vegetation. It is capable of forming dense thickets and can inflict painful injuries to humans and livestock with its long spines. The seed pods are eaten by cattle and this promotes the spread of the plants.

Identification and Description

Growth Form:
A deciduous, leguminous tree.

Height:
Commonly 3-4m high but can grow up to 25m.

Stem:
Dark grey bark, divided into thin tight scales. Tough thorny spikes growing on the trunk and branches, up to 50mm long, make this species easy to identify.

Leaf:
Pinnate or feather like, with 18 to 28 leaflets.

Flower:
In October-November it bears creamy, yellow hanging flowers.

Fruit:
A large pod, 10 to 18 inches long, often twisted, 1 to 1 1/2 inches wide, flat, dark brown or black when ripe and containing yellow seeds.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Cut stump and paint with glyphosate. Larger specimens can also be stem injected by frilling or drilling.

Disposal:

- Leave cut material in situ but bag and remove all seed pods.

Native species similar in appearance

None locally.

Photos courtesy of Biosecurity Queensland.

Lantana

General information

Common name:
Lantana (Pink, Red and White)

Scientific name:
Lantana camara

Where do I find it?
Weed of pastures, forestry areas, roadsides, gullies, waterways and wastelands.

Why is it a problem?

Garden escape, now a widespread and common pest, capable of forming dense thickets in disturbed areas. Before removing, check that it is not being used for habitat by native birds and possums.

Identification and Description

Growth Form:
A rambling shrub able to climb into the canopy.

Height:
Up to 4 metres high.

Stem:
Prickly, square in cross-section and usually with a pithy centre. Canes are capable of rooting if in contact with moist soil.

Leaf:
Opposite, pale green, with slightly rounded toothed margins. Some forms carry backwardly curved prickles. The leaves have a characteristic odour.

Flower:
Compact heads of several individual flowers each having a tubular corolla with 4 spreading lobes.

Fruit:
A clustered berry, purplish when ripe. Spread rapidly by birds into pristine bushland.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Hand removal or with larger shrubs cut and paint, stem injection, frilling or chipping methods using glyphosate. Follow-up required for re-shooting stems.

Disposal:

- If material and ground is dry, leave canes on ground as mulch. Bag all fruit if possible. Avoid contact of stems with damp ground. Native bees use dry stems as habitat.

Native species similar in appearance

- *Plectranthus parvifolius* (seedling) has a pleasant "herbal odour" to leaves and is a much smaller weaker herb.
- *Trema aspera* (Native Peach) has similar looking leaves but has no odour to leaves.

Paddy's Lucerne

General information

Common name:
Paddy's Lucerne; Sida

Scientific name:
Sida rhombifolia

Where do I find it?
Weed of mechanically disturbed pastures, gardens and wastelands in high rainfall areas of Australia.

Why is it a problem?

Prolifically fruiting plant with seeds that remain dormant in the soil for long periods. Germinates readily after fire.

Identification and Description

Growth Form:
Robust, erect, but many branched, perennial herb to small shrub.

Height:
To 2m.

Stem:
Woody green stems covered with star-shaped hairs. Strong, deep, kinked taproot.

Leaf:
Dull green, paler below, diamond-shaped.

Flower:
Pale yellow and solitary, or sometimes 3-4 flowers at ends of branches.

Fruit:
A dark brown capsule containing reddish-brown to black seeds, each seed with 2 awns.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Hand pull small plants; larger ones may be pulled out of soft soil with pliers; woodier plants should be treated by cutting & painting the stems with glyphosate.

Disposal:

- Remove all fruit.

Native species similar in appearance

Sida corrugata and *Sida spinosa* live in drier *Eucalyptus moluccana & E. tereticornis* woodland in Western Sydney on Wiannamatta Shale soils.

Pampas Grass

General information

Common name:
Pampas Grass

Scientific name:
Cortaderia jubata

Where do I find it?
Usually found on disturbed sites in a variety of soil types. It can also colonise in relatively undisturbed catchments and grow along walking tracks, fire trails and watercourses.

Why is it a problem?

Pampas Grass is a very large perennial grass, capable of forming dense infestations which completely alters a vegetation community. Each plant produces several tall flower spikes, which can produce up to 100,000 seeds each. The wind-distributed seed can travel up to 40km. The plant may also reproduce from rhizomes beneath the soil.

Identification and Description

Growth Form:
Large grass with multiple flower spikes.

Height:
To 6m.

Stem:
Single stem up to 3m, usually covered by leaves.

Leaf:
Light green basal leaves up to 2m long x 2cm wide. Leaf edges are roughly serrated and often cause skin irritations.

Flower:
Several flower spikes per plant (each up to 3m long). Flowers are soft white in colour.

Seed:
Up to 100,000 wind dispersed seeds per flower spike.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Remove and bag seed heads to prevent further spread. Small to medium plants may be removed manually using a mattock, with care to remove all root material. Plants may be sprayed using glyphosate.
  Follow-up spraying is often required after approximately three months.

Disposal:

- After the seed head has been removed and disposed of carefully the remainder of the grass can be left in place. If the plant needs to be removed from the site completely, make sure to remove all root material including rhizomes.

Native species similar in appearance

This is a very distinctive grass once you become familiar with it. It can appear similar in appearance to *Lomandra spp* and *Xanthorrhoea spp* (Grass Tree) when small.

Privet

General information

Common name:
Small and Large (or Broad) Leaf Privet

Scientific Name:
Small Leaf Privet - *Ligustrum sinense*
Large Leaf Privet - *Ligustrum lucidum*

Where do I find it?
Found on the coast and tablelands of NSW. Both species are a particular problem in urban bushland around Sydney due to the dispersal of berries by birds. Favours riparian areas.

Why is it a problem?

Medium to fast growing large shrubs or small trees producing thousands of berries. Their dispersal by birds means the plants are capable of being introduced into pristine bushland. Pollen may cause hay fever and asthma.

Information and description

Growth form:
Densely branched leafy shrub or small tree.

Height:
Both species grow as shrubs or trees, with small-leaf privet averaging 3-5m tall (up to 7m) and large leaf privet averaging 4-10m (up to 12m tall).

Stem:
Woody, light brown stem covered in lenticels (pores).

Leaf:
- In small leaf privet: opposite, glossy, thin textured and soft, up to 7cm long with a wavy margin. Glossy dark green on upper surface, paler green on lower surface.
- In large leaf privet: opposite, 4-13cm long, 3-6cm wide on stalks 1-2cm long. Leaves ovate to elliptic, leaf edges without teeth or lobes, glossy dark green on upper surface, paler green on lower surface.

Flower:
Both species produces white fragrant flower heads and flower mostly in summer.

Fruit:
Berry 6-8mm long, purple-black-blue and succulent when ripe.

Best control methods

(see pages 70-75 of this booklet)

Treatment:
- Cut and paint or frill and inject with glyphosate. May coppice from the base and sucker from the roots so follow-up is often required. Removal of large areas often encourages the germination of a short-lived seed bank that can be sprayed with diluted glyphosate or hand weeded.

Disposal:
- Dispose of all berries if possible, and leaved killed plant in situ.

Native species similar in appearance:

- Morinda (*Morinda jasminoides*) which is a creeper. Has small pits in the leaf which can be found where the veins meet the midvein.
- Grey Myrtle (*Backhousia myrtifolia*) has a pleasantly scented leaf when crushed and the leaf veins run out to the leaf margins.
- Lilly Pilly (*Acmena smithiii, Syzigium spp*) are rainforest species with visible oil dots on leaves. Fruit is a round or grape sized pink, red or purple (or occasionally white) berry.

Tree of Heaven

General information

Common name:
Tree of Heaven

Scientific name:
Ailanthus altissima

Where do I find it?
Throughout NSW and Victoria as a weed of wasteland and degraded pasture and along inland rivers and creeks.

Why is it a problem?

The leaves and bark are possibly toxic to animals. Suckers vigorously when disturbed forming dense stands.

Identification and Description

Growth Form:
An erect, deciduous shrub or tree with a deep taproot and several lateral roots that sucker freely forming clumps of stems.

Height:
Commonly 3-4m high but can grow up to 20m.

Stem:
Grey bark, slightly roughened and pitted, becoming smooth and speckled toward the tips.

Leaf:
Large, to 80cm, with up to 20 pairs of opposite leaflets and 1 terminal leaflet. The base of each leaf is lobed and contains a gland that has a very unpleasant odour.

Flower:
White or greenish in terminal clusters up to 6-12cm long.

Fruit:
Seeds surrounded by a large wing, yellow to green becoming red.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Hand pull seedlings, mattock out larger specimens ensuring removal of all suckers. Cut & paint or inject with herbicide when actively growing in midlate summer. Follow-up treatment of suckers may be necessary.

Disposal:

- Leave cut material in situ, unless it is seed bearing.

Native species similar in appearance

- *Toona australis* (Red Cedar) lacks the terminal leaflet and the glandular lobes.
- *Polyscias murrayi* (Pencil Cedar) lacks the odour of Tree of Heaven.

Wild Tobacco

General information

Common name:
Wild Tobacco

Scientific name:
Solanum mauritianum

Where do I find it?
A common weed found in disturbed areas such as roadsides and pasture and also in intact native plant communities. It enjoys wet margins of forests and riverbanks and tolerates both shade and full sun.

Why is it a problem?

People can suffer serious allergic reactions after contact with the hairs on stems and leaves. This plant acts as a coloniser, growing quickly, out-competing native plants and suppressing natural regeneration by changing light conditions beneath its canopy.

Identification and Description

Growth Form:
Perennial shrub or small tree.

Height:
To 4m or more.

Stem:
Grey-green, woody (to 15cm in diameter) and hairy.

Leaf:
Simple, alternate, ovate to 30cm long and 15cm wide. Grey-green colour on top and pale underneath. Felt-like texture.

Flower:
1cm diameter, purple/violet to white, with distinctive yellow stamens. Flowers spring to summer.

Fruit:
Succulent 1-1.5cm diameter berry (green maturing to dull yellow). Berries observed at the end of summer.

Note:
The plant's berries can stay viable in the soil for many years and only requires light for germination. Seed is spread by water, birds, humans and dumped garden waste. This shrub coppices at its base once disturbed. Seed also germinates after fire.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Cut and paint larger plants with glyphosate and hand pull smaller ones. Use of surfactant is recommended.
- Remove seedlings by hand as they appear.

Disposal:

- Leave treated trunks on the ground or mulch.

Native species similar in appearance

- Flannel Leaf (*Astrotricha flocossa; Astrotricha latifolia*) — erect shrubs 2-3m tall. Soft woolly hairs cover the stems, leaf stalks and under surface of leaves. Leaves are large (10-20cm long and 2-7cm wide), ovate to lanceolate in shape. Flowers are whitish to grey. Flowers October - January.
- Seringia (*Seringia arborescens*) - an erect or spreading shrub usually 2-4m tall. Leaves are broadly lance shaped, droopy, 8-12cm long, hairless above with rusty-brown hairs below. Flowers are a cream colour and occur in short stalked clusters. Flowers spring - summer.

Willows

General information

Common name:
Willows

Scientific Name:
Salix spp

Where do I find it?
There are a range of invasive willows found along riparian zones and wet areas through out NSW.

Why is it a problem?

Most species of willow are Weeds of National Significance. They are among the worst weeds in Australia because of their invasiveness, potential for spread, and economic and environmental impacts. They have invaded riverbanks and wetlands in temperate Australia, occupying thousands of kilometres of streams and numerous wetland areas. In the Hawkesbury Nepean region Willow species such as Black Willow (*Salix nigra*) and White Willow (*Salix alba*) produce seed which can spread for kilometres in wind or water. These fast growing trees displace native vegetation and quickly form dense stands where no other plants can

grow. Root mats can collect silt and change stream flow. Large numbers of trees can collect debris and divert flow into adjacent river banks causing erosion. The deciduous nature of these trees also changes stream ecology reducing biodiversity.

NB. Does not including Weeping Willow (*Salix babylonica*)

Information and description

Growth form:
Medium size trees or large shrubs, deciduous in winter.

Height:
Up to 20m.

Leaf:
With the exception of the pussy willows, the leaves of all species are long and narrow, with finely toothed edges and usually a paler underside.

Flower:
Upright catkins (flower stalks) carry numerous tiny flowers.

Fruit:
Willows have small seeds with long, silky hairs attached to one end like a parachute, which help them spread. The seeds are usually short-lived, from days to a few weeks.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Drill or frill large trunks with undiluted glyphosate. Smaller stems cut and paint, paint cut-off end as well. Hand-pull seedlings.

Disposal:

- Any cut or broken pieces can re-grow so remove and dispose of at a waste facility or burn. Do not leave debris where it can be washed into a waterway. Bag seeds if cut at flowering.

Native species similar in appearance

None locally.

Alligator Weed

General information

Common name:
Alligator Weed

Scientific name:
Alternanthera philoxeroides

Where do I find it?
It grows in both water and on land and is usually found in stationary, slow moving waters, or damp paddocks.

Why is it a problem?

A small piece of stem is enough to start a new alligator weedplant. It is capable of choking waterways in a single season, smothering native plant communities and disrupting waterflow. Soil containing alligator weed fragments can not be sold or moved by law.

This weed has been declared noxious in some local government areas of catchment. Check with your council or the Department of Primary Industries about the noxious status and its implications.

Identification and Description

Growth Form:
Generally a floating aquatic, but sometimes a terrestrial perennial herb.

Height: On land, plants can grow to 50cm using adjacent plants for support.

Stem:
Hollow.

Leaf:
Leaves are 2-5cm long and 1-2cm wide. They are arranged in opposite pairs at regular intervals along the stem. Leaves are shiny dark green in summer, pointed at the ends with obvious veins and smooth edges.

Flower:
White compact papery flower on a short stalk. Flowering time is late spring to autumn.

Fruit/Seed: Produced, but rarely viable under Australian conditions. Reproduction is entirely vegetative.

What to do if you find Alligator Weed?

If you have a plant you think might be alligator weed, you are required to notify your local council or Department of Primary Industries immediately.

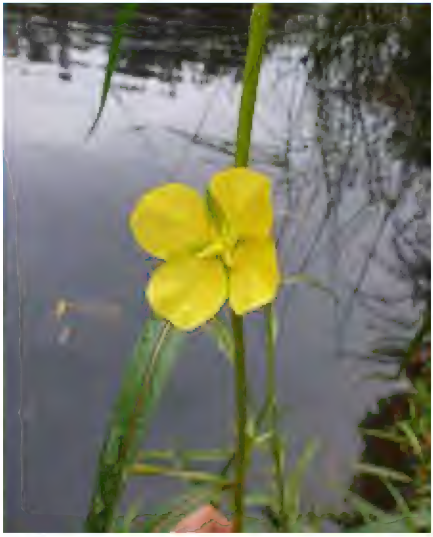
DO NOT ATTEMPT TO REMOVE IT YOURSELF.

It is an offence to spread Alligator weed, including plant fragments. Offenders are liable to a significant fine. Disturbing the plant can cause it to spread further as a small broken piece of stem is enough to start a new plant.

Native species similar in appearance

- Water Primrose - *Ludwigia peploides ssp.montevidensis*. Flowers are yellow not white, leaves are alternate not opposite, and the stem is not hollow.
- Smart weed - *Persicaria decipiens*. Flower head consists of multiple pale pink flowers along a common stem. Leaves are usually slightly wavy and are alternate not opposite.

Ludwigia



General information

Common name:
There are two types of weedy Ludwigia in the area, Peruvian Primrose (*Ludwigia peruviana*) or Long-leaf Ludwigia (*Ludwigia longifolia*). They should not be confused with the native species of Water Primrose (*Ludwigia peploides ssp. montevidensis*).

Scientific name:
Ludwigia peruviana; Ludwigia longifolia

Where do I find it?
Found in shallow, still or slow moving streams, wet marshy soils, drying mud and on creek banks.

Why is it a problem?

Ludwigia species are capable of filling and blocking waterways, reducing the flow, and limiting navigation and recreational activities. Ludwigia displaces native vegetation and has become naturalised in some areas.

Identification and Description

Growth Form:
Perennial wetland shrub.

Height:
Both species can grow up to 3m high.

Stem:
Dark green or brownish green. Hairy when young.

Leaf:
In both species leaves are usually alternate. *Ludwigia peruviana* leaves are 5-10cm long and hairy, *Ludwingia longifolia* leaves are 5-35cm long and hairless. In both species leaves are 1-3cm wide. Leaves can die back in winter (in Sydney).

Flower:
Yellow with 4 (occasionally 5) petals and a diameter of 2-4 cm. Flowering from late summer to autumn.

Fruit/Seed:
Seeds light brown.

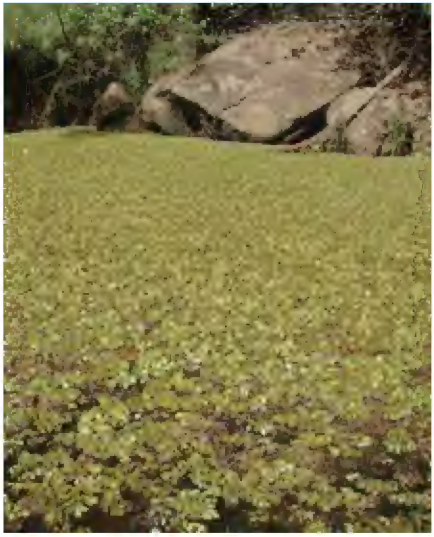
What to do if you find Ludwigia?

If you have a plant you think might be Ludwigia notify your local council or Department of Primary Industries. They can provide advice and assistance to suppress and destroy the infestation.

Native species similar in appearance

The native species Water Primrose (native) (*Ludwigia peploides ssp. montevidensis*). Has a similar flower to the introduced Ludwigias but has a completely different growth form. The native Water Primrose has floating stems which lay on top of the water and are relatively short, whilst these introduced Ludwigia are shrubs that grow to 3m.

Salvinia



General information

Common name:
Salvinia

Scientific name:
Salvinia molesta

Where do I find it?
Found floating on still or slightly flowing water.

Why is it a problem?

It grows very rapidly and can completely cover waterways as a dense mat. This mat seriously affects navigation, light penetration and dissolved oxygen levels.

Identification and Description

Growth Form:
A free-floating perennial aquatic fern that can form dense mats.

Stem:
Stems are slender, jointed and very branched. Invading plants have stems, up to 30cm long. Where plant numbers are higher the stems are usually much shorter than this.

Leaf:
Leaves are in groups of 3, the upper 2 are folded and float on the waters surface, whilst the 3rd remains submerged and is divided, root-like and hairy.

Flower:
No flower.

Fruit/Seed:
Does not produce fruit. Reproduces vegetatively.

What to do if you find Salvinia?

If you have a plant you think might be Salvinia, you are required by law to notify your local council or Department of Primary Industries immediately.

DO NOT ATTEMPT TO REMOVE IT YOURSELF.

Disturbing the plant can cause it to spread further as a small broken piece of Salvinia is enough to start a new plant. It is illegal to spread Salvinia.

Native species similar in appearance

Azolla pinnata - Is also a free floating fern which can form dense mats. These plants have very different leaf forms to salvinia. The leaves are much smaller, and are usually tinged red, particularly during summer and autumn.

Photos (right) courtesy of Rebecca Coventry.

Senegal Tea

General information

Common name:
Senegal Tea

Scientific Name:
Gymnocoronis spilanthoides

Where do I find it?
Damp floodplain soils, on the margins of creeks and dams, in wetlands and in still or slow-flowing fresh water.

Why is it a problem?

Senegal tea is a highly invasive and destructive aquatic weed. It is a hardy plant with a rapid growth rate; it can reproduce from seed or stem fragments.

Information and description

Growth form:
Erect or sprawling bushy perennial herb

Height:
To 1.5m tall.

Stem:
Stems are ribbed, pale green and erect, becoming prostrate as they lengthen and age. They are hollow between the nodes and buoyant, able to form tangled floating mats. Stems branch at nodes and are 1-1.5m long and 5-10mm in diameter, increasing to 1-2cm with age. Fine, fibrous roots form at stem nodes.

Leaf:
The tapered leaves are dark green, 5-20cm long, 2.5-5cm wide, grow on short stalks and have serrated, slightly wavy margins. They occur in opposite pairs along the stems.

Flower:
White, pom-pom-like flowers 1.5-2cm in diameter occur in groups at the ends of stems. Flowering starts in late spring or early summer and continues until temperatures fall. Flowers have a strong fragrance.

Fruit:
Seeds are yellow-brown, 5mm in diameter, and ribbed.

Best control methods

(see pages 70-75 of this booklet)

Treatment:

- Control should not be attempted by individuals as Senegal tea can spread very easily from plant fragments. If you suspect you have Senegal tea seek advice from your local weeds council. This plant can be eradicated if detected early in its establishment.

Native species similar in appearance

None locally.

Water Hyacinth

General information

Common name:
Water Hyacinth

Scientific name:
Eichhornia crassipes

Where do I find it?
Found within still or slow moving freshwater bodies.

Why is it a problem?

It is capable of blocking waterways, interfering with water flow, navigation and fishing. Dense infestations can reduce oxygen levels in water; alter pH and temperature, increase carbon dioxide levels and can increase water loss through transpiration.

Identification and Description

Growth Form:
An erect floating perennial herb.

Height:
Up to 1m high.

Stem:
Either erect, to 60cm long, or horizontal and about 10cm long.

Leaf:
Leaves either long and thin (up to 60cm long), or circular (up to 30cm diameter). They are smooth and glossy. The leaf stalks have bladder-like swellings which consist of large air cells which enable the plant to float on water.

Flower:
Flowers are bluish purple, funnel shaped, 4-7cm diameter, with 6 petals. The top petal has a yellow blotch in the centre surrounded by darker purple. Flowering begins in January or February and continues into Autumn.

Fruit:
A narrow capsule 1-1.5cm long.

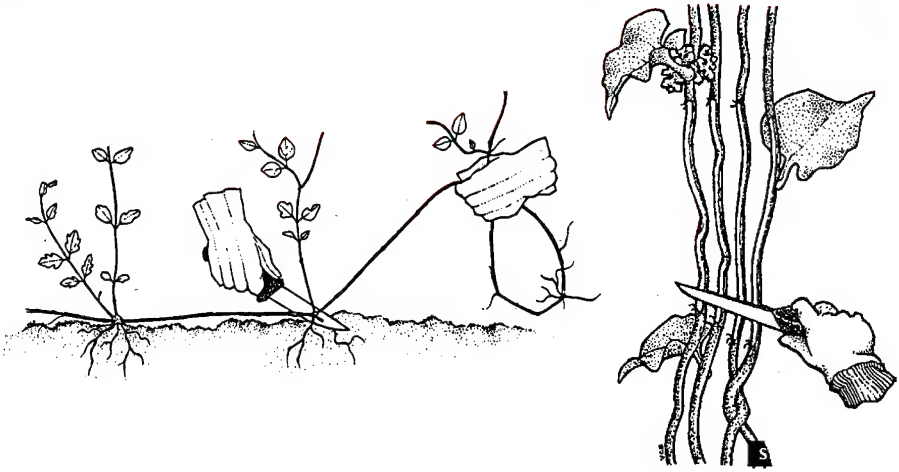
What to do if you find Water Hyacinth?

If you have a plant you think might be Water Hyacinth, notify your local council or Department of Primary Industries.

Native species similar in appearance

None locally.

CONTROL OF VINES AND SCRAMBLERS



Methods of Removal

Hand Removal

Step 1: Take hold of one runner and gently pull it along the ground towards you.

Step 2: Checkpoints of resistance where fibrous roots grow from the nodes. Cut roots with a knife or dig out with a trowel and continue to follow the runner.

Step 3: The major root systems need to be removed manually or scrape/cut and painted with herbicide.

Step 4: Bag any reproductive parts.

Stem Scraping

Step 1: With a knife, scrape 15 to 30 cm of the stem to reach the layer below the bark/outer layer.

Step 2: Immediately apply herbicide along the length of the scrape.

Considerations

A maximum of half the stem diameter should be scraped. Do not ring bark.

Larger stems (>1 cm) should have two scrapes opposite each other.

Aerial tubers on Madeira vine should die with the plant when stem scraping is used. Those that fall from the plant in the scraping process need to be bagged.

Vines can be left hanging in trees after treatment.

CONTROL OF SMALL HAND-PULLABLE PLANTS

Methods of Removal

Hand Removal *(minimal disturbance)*

Step 1: Gently remove any seeds or fruits and carefully place into a bag.

Step 2: Grasp stem at ground level.

Step 3: Rock plant backwards and forwards to loosen roots, and pull out gently.

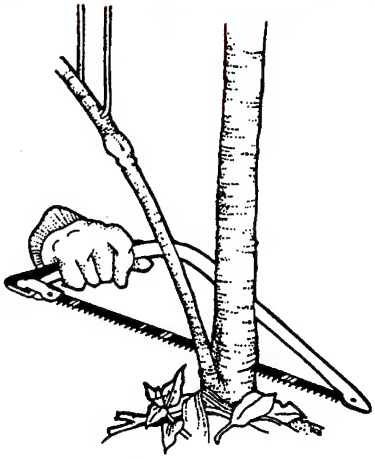
Step 4: Carefully tap the roots to dislodge any soil. Replace disturbed soil and pat down.

Considerations

Leave weeds so that roots do not make contact with soil e.g. on a rock – a small amount of debris can be hung in a tree or removed from the site.

Vary your body position to avoid fatigue when using hand removal continuously.

To Control: *Small soft weeds e.g. Fleabane, crofton weed, small grasses; seedlings of any weeds including privet, lantana, moth vine.*



Methods of Removal

1. Cut and Paint: Useful for small to medium sized woody weeds up to 10cm basal diameter.

Step 1: Make a horizontal cut as close to the ground as possible with secateurs, loppers or a bush saw.

Step 2: Immediately apply herbicide to the exposed flat stump surface.

Safety Considerations

The following general precautions should be made when using herbicides:

- Read the label before opening the container and follow the instructions.
- Wear protective clothing as directed on the label.
- Wash hands after use and before eating or smoking.

Considerations

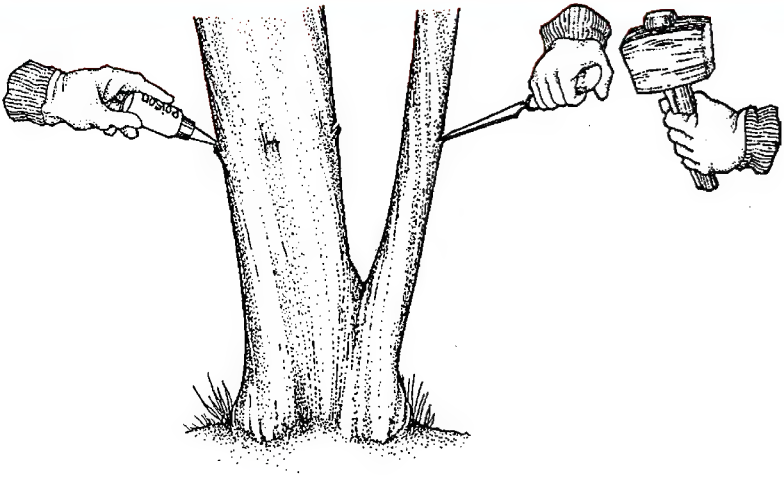
Cuts should be horizontal to prevent herbicide from running off the stump. Sharp angle cuts are hazardous.

Herbicide must be applied immediately before the plant cells close and translocation of herbicide ceases.

If plants resprout, cut and paint the shoots after sufficient regrowth has occurred.

Stem scraping can be more effective on some woody weeds.

Examples of woody weeds include: Lantana, bitou bush, cotoneaster, privet (cut and paint) Camphor laurel, Mickey Mouse bush (ochna) and cassia/senna (stem scrape).



Methods of Removal

2. Stem Injection:

Step 1: At the base of the tree drill holes at a 45 degree angle into the sapwood at 5 cm intervals.

OR

3. Frilling or chipping:

Make a cut into the sapwood with a chisel or axe.

Step 2: Fill each hole/cut with herbicide immediately.

Step 3: Repeat the process at 5 cm intervals around the tree.

Considerations

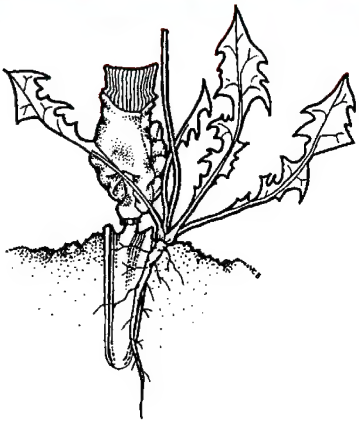
Plants should be healthy and actively growing.

Deciduous plants should be treated in spring and autumn when leaves are fully formed.

For multi-stemmed plants, inject or chip below the lowest branch or treat each stem individually.

Herbicide must be injected immediately before the plant cells close (within 30 seconds) and translocation of herbicide ceases.

CONTROL OF WEEDS WITH UNDERGROUND REPRODUCTIVE STRUCTURES



Methods of Removal

Hand Removal of plants with a taproot

Step 1: Gently remove and bag seeds or fruit.

Step 2: Push a narrow trowel or knife into the ground next to the taproot. Carefully loosen soil. Repeat this step around the taproot.

Step 3: Grasp stem at ground level, rock plant backwards and forwards and pull gently.

Step 4: Gently tap the roots to dislodge soil. Replace disturbed soil and lightly pat down.

Crowning *(Many grasses can be crowned, e.g. asparagus fern)*

Step 1: Gently remove and bag stems with seed or fruit.

Step 2: Grasp the leaves or stems together so that the base of the plant is visible.

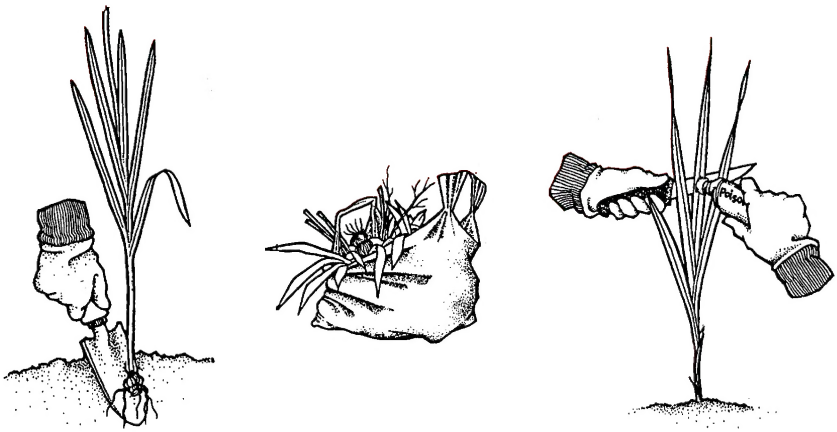
Step 3: Insert, at an angle, a knife or lever, close to the "crown".

Step 4: Cut through all the roots around the crown

Step 5: Remove and bag the crown.

Examples: Weeds with: Tap roots – cats ear, dandelion; Rhizomes – asparagus fern, ginger plant; Bulbs and corms – oxalis, onion weed, watsonia, freesias, montbretia; Tubers – Madeira vine, arrowhead vine.

CONTROL OF WEEDS WITH UNDERGROUND REPRODUCTIVE STRUCTURES



Methods of Removal

Plants with bulbs, corms or tubers

Examples: onion weed, watsonia, arrowhead vine, montbretia

Step 1: Move leaf litter away from base of plant.

Step 2: Dig down next to the stem until the bulb or tuber is reached.

Step 3: Remove plant and carefully bag the bulb or tuber.

Herbicide treatment - stem swiping

Step 1: Gently remove any seed or fruit and carefully place into a bag.

Step 2: Using a herbicide applicator, swipe the stems/leaves.

Considerations

Further digging may be required for plants with more than one tuber (e.g. arrowhead vine).

Some bulbs (e.g. oxalis, onion weed) may have small bulbs attached or present in the soil around it. These need to be removed.

It may be quicker and more effective to dig out the weed.

Make sure native plants and seedlings will not be affected.

Learn and understand how the herbicide works – for bulb and corm species the most effective time is after flowering and before fruit is set.

Have you addressed all safety issues?

CONTACTS FOR INFORMATION AND ADVICE

Greater Sydney Local Land Services

Greater Sydney Local Land Services provides agricultural advice, plant and pest control, biosecurity and emergency management services and natural resource management services. Greater Sydney Local Land Services offers a variety of funding programs to protect river health and biodiversity. We also provide advice on rehabilitating and caring for river and stream banks. For more information contact us on 1300 795 299 or go to www.lls.nsw.gov.au

NSW Department of Primary Industries

This Department incorporates the former NSW Agriculture and NSW Fisheries. It can provide information on weeds, weed control (including noxious weeds) and sustainable agriculture. The Department can also provide information on in-stream biota and habitat. For agriculture or weed related inquiries contact 1800 808 095.

Local Council

Your local council can provide local knowledge and advice relating to many different river issues. Local council also manages 'Bushcare', an initiative that gives community volunteers the opportunity to work on projects regenerating local riverside parks.

Landcare

Landcare is a movement of private landholders working together to achieve environmental outcomes on their land. Joining your local Landcare group is a great way to get to know your neighbours, learn your plants and benefit from other's local knowledge. To find your nearest Landcare group contact the Regional Landcare Facilitator on (02) 4725 3050.

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Local Land
Services
Greater Sydney

For more information contact
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on 1300 795 299
www.lls.nsw.gov.au